WG4-Biomedical & Agriculture Applications

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4th Management Committee / Working Group Meeting and Workshop, March 30-31, 2015, Graz, Austria
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1. Resonant Structures for Non-Invasive Medical Uses
   1.1. Next step: Near field solution for resonant structure activation?

2. Collagen electrical properties studies relating to medical application
   2.1. Collagen resonant bandage proposal
   2.1. Near field solution for resonant collagen bandage activation?

3. Application to improve in vitro rooting plants
1. Resonant Structures for Non-Invasive Medical Uses

“Electrical acupuncture” using passive resonant structures:

- Top layer coil
- Double layer coil
- Multilayers coils
1. Resonant Structures for Non-Invasive Medical Uses

Top layer coil structures
1. Resonant Structures for Non-Invasive Medical Uses

Double layer coil structures

E field    H field
1. Resonant Structures for Non-Invasive Medical Uses

Multilayer coils structures

E field

H field
1. Resonant Structures for Non-Invasive Medical Uses

After left leg stimulation

Spot 31.8 °C

Dist = 3.3  Trefl = 20.0  ε = 0.95
Response in case of sinusitis
1. Resonant Structures for Non-Invasive Medical Uses

1.1. Near field solution for resonant structure activation?
2. Collagen electrical properties studies relating to medical application

Collagen is the main structural protein found in animal connective tissue, yielding gelatin when boiled.

Among these, collagen is the major structural protein and is the most abundant in the human body.

It is in studies the possibility to use the collagen as support for medical treatment at the level of deep wounds.
2. Collagen electrical properties studies relating to medical application

The collagen present 27 MHz resonance frequency after 24 h
2. Collagen electrical properties studies relating to medical application

2.1. Collagen resonant bandage proposal

A strip of material containing COLLAGEN used to bind a wound or to protect an injured part of the body.

2.1. Near field solution for resonant collagen bandage activation?

STSM Applicant: Ms Catarina Lopes, University Of Beira Interior, Covilhã (PT)

STSM Topic: New materials and fabrication techniques for the development of substrate integrat textile antennas

Host: Hendrik Rogier, Ghent University, Ghent (BE),
3. Application to improve in vitro rooting plants

ELF application: Minilab for Evaluating the Influence of magnetic Field over “In Vitro Cultures”
3. Application to improve in vitro rooting plants

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3. Application to improve in vitro rooting plants

Actual stage of the research

Next step: Applications for increased efficiency in grafting trees
Conclusions

- The active solutions are under research;
- Could be compatibility problems;
- Are open subjects for collaborations.
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